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RODENTS AND LAGOMORPHS FROM THE MIOCENE FORT LOGAN AND DEEP RIVER FORMATIONS OF MONTANA

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The rodents and rabbits described below represent a part of a collection made by Dr. H. J. Koerner for the Peabody Museum of Natural History, Yale University, during the summers of 1935 and 1937 near Fort Logan, Montana. I would like to thank Dr. Koerner for the stratigraphic and locality data used below and Dr. J. T. Gregory for the opportunity to study these specimens. I would also like to thank Prof. B. Patterson, Prof. A. E. Wood, and Dr. Mary Dawson for many helpful comments and criticisms. The illustrations are by Mr. James O. Farley and were made possible by a grant from the Gulf Oil Corporation.

The following forms are described below:

Fort Logan Fm.

Niglarodon koerneri n.g. & sp.

Eumys eliensis n. sp.

Palaeolagus hypsodus

Megalagus dawsoni n. sp.

[1] This study was begun while the author was Rufus B. Kellogg Fellow from Amherst College.

Deep River Fm.

Protospermophilus angusticeps
Monosaulax cf. *M. hesperus*
Paciculus montanus n. sp.
Mookomys cf. *M. altiflaminus*
Dikkomys woodi n. sp.
Hypolagus sp.

Of these forms, *Protospermophilus angusticeps* (Matthew & Mook, 1933) and *Mookomys altiflaminus* (Wood, 1931) have been previously recorded from the Deep River Formation.

In addition, *Mesogaulus ballensis* (Riggs, 1899) has been reported from the Deep River Formation but it is not represented in the present collection.

The following abbreviations are used throughout:

A.M.N.H.—American Museum of Natural History, New York

U.K.—Museum of Natural History, University of Kansas

Y.P.M.—Peabody Museum of Natural History, Yale University

Class MAMMALIA

Order Rodentia

Family Aplodontidae

Niglarodon[2], n. gen.
(Figure 1a & b)

Type species: *Niglarodon koerneri*[3], n. sp.

Diagnosis: Jaw slender and less robust than that of *Meniscomys or Sewellelodon*; teeth rooted, more hypsodont than in

[2] From *Niglaros* Gr. whistle and *Odon* Gr. tooth.
[3] For H. J. Koerner who made the collection.

Haplomys or *Allomys*, less so than in *Meniscomys* and *Sewellelodon*; flexids persisting to, or near, tooth base; molars of equal size; posterior protoconid arm well developed, passing across the molars to prominent mesostylid on M_1-M_3; principal cusps prominent with buccal and lingual flexids deep; mesoconid extremely large on P_4.

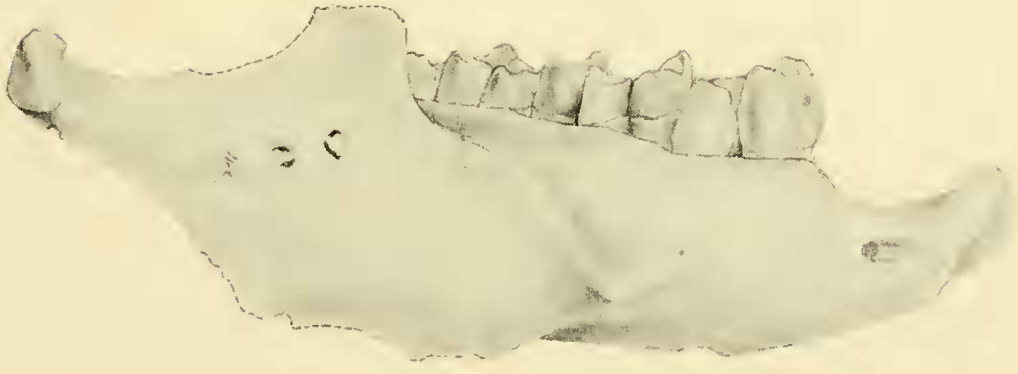
Niglarodon koerneri, n. sp.

Type: Y.P.M. No. 14024, right mandible with P_4-M_3, lacking the incisor, coronoid process, and angle.

Hypodigm: Type only.

Horizon and Locality: Section 4, T10N, R5E, Meagher County, Montana. Fort Logan Formation, Arikareean.

A



B

Figure 1. *Niglarodon koerneri* n. sp., Y.P.M. No. 14024, type. A. Right P_4-M_3, anterior end to the right, X10. B. Lateral view of right mandible, X5.

DESCRIPTION

The angle and coronoid process are missing but the condyle is preserved and lies in a plane only slightly above the tooth row. It is not greatly elevated as in *Tardontia* and *Aplodontia*. The masseteric ridge is weak in comparison with the other early Miocene genera although it ends in a well-defined tubercule below the anterior roots of M_1. The coronoid process rises steeply between M_2 and M_3. The mental and dental foramina are as in *Sewellelodon* and *Aplodontia*.

The fourth premolar has five well-defined major cusps. The protoconid and metaconid are joined posteriorly, the anteroflexid cleaving the anterior face of the tooth to within .5 mm. of the anterior root. There is a minute cuspule, that barely breaks the continuity of the slope, present at the base of the protoconid anteriorly. The metastylid is large and separated from the mesoconid and entoconid by a deep mesoflexid directed anteriorly. The protoflexid and hypoflexid join buccally and are extremely deep, reaching almost to the base of the crown. The metafossettid is small and shallow.

The molars are all nearly similar in structure. The hypoconid is the largest cusp. The anterior cingulum is separated from the metaconid in unworn teeth by a shallow cleft, but becomes fused with the metaconid slope after little wear. There is a distinct mesoconid on all the molars. The hypofossettid has been cut off on M_1 and M_2 as a very small lake; it is still slightly open on M_3. The protoflexid is open in all three molars and would never have been cut off to form a lake. The metafossettid is small on all molars but larger than that on P_4. The posterior protoconid arm is well developed, extending to the mesostylid but is lower on M_3 than on M_1 or M_2; it is separated from the metaconid by a narrow flexid, which would soon have closed off to form a lake on M_1 and M_2, as it has on M^3, and from the entoconid by a wider and much deeper mesoflexid. The teeth are worn in such a way that the metaconid is by far the highest cusp on all the teeth.

DISCUSSION

Niglarodon is the fifth genus of aplodontid to be described from the Lower Miocene of North America. *Haplomys*, known

only from the John Day, is much too low-crowned to be closely related to *Niglarodon*. *Allomys*, also known only from the John Day, has become more highly specialized than any other Lower Miocene aplodontid through the development of numerous accessory lophs and pits in the upper and lower cheek teeth. *Sewellelodon* and *Meniscomys* (see Shotwell, 1958, for the most recent review of aplodontoid evolution) from the Middle and Upper John Day would appear to have the closest relationships with *Niglarodon*. The crown pattern is basically similar in all three genera with only minor variations. The major differences between these genera are in robustness, height of crown and depth of crown pattern. Of the three, *Niglarodon* is the most generalized. The teeth are high-crowned, although not as much so as in *Meniscomys* or *Sewellelodon*, and the depth of crown pattern has kept pace with this increase in crown height, which is not the case in the other two genera. *Niglarodon* would therefore seem to represent an earlier stage in the aplodontid line leading to *Meniscomys* and then through *Sewellelodon* and *Liodontia* to the recent *Aplodontia*. Also, because of its more generalized structure, *Niglarodon* would seem to be closer structurally, although not in time, to the point of aplodontid-mylagaulid divergence than *Meniscomys*.

MEASUREMENTS

	a-p	tr.[4]
P_4	3.10	1.80-1.95
M_1	1.90	1.60-1.70
M_2	2.00	1.75-1.70
M_3	2.10	1.75-1.60

Family Sciuridae

Protospermophilus angusticeps Matthew and Mook, 1933

[4] When two transverse measurements are given, the first is that of the protoloph or metalophid, the second is that of the metaloph or hypolophid. All measurements are in millimeters.

Horizon and Locality: Section 25, T10N, R5E, Meagher County, Montana. Deep River Formation, Upper Hemingfordian.

Referred Specimens: Y.P.M. Nos. 14029 maxillary with M^3, 14030 partial maxillary with M^1-M^2, 14031 partial left mandible with M_1-M_3, 14032 partial left mandible with M_1-M_3, 14033 partial left mandible with M_1-M_2, 14034 partial left mandible with M_1.

DESCRIPTION

The six specimens here referred to *Protospermophilus angusticeps* agree well with the type also from the Deep River of Montana. A detailed description of these specimens is deferred to a later paper dealing with the evolution of the North American Tertiary Sciuridae.

Family Castoridae

Monosaulax cf. *M. hesperus* (Douglas, 1901)

(Figure 2)

Horizon and Locality: Section 1, T9N, R4E, Meagher County, Montana. Deep River Formation, Upper Hemingfordian.

Referred Specimen: Y.P.M. No. 14035, a right mandible with M_1-M_3, lacking the anterior portion of the jaw in front of M_1, the incisor, and ascending ramus.

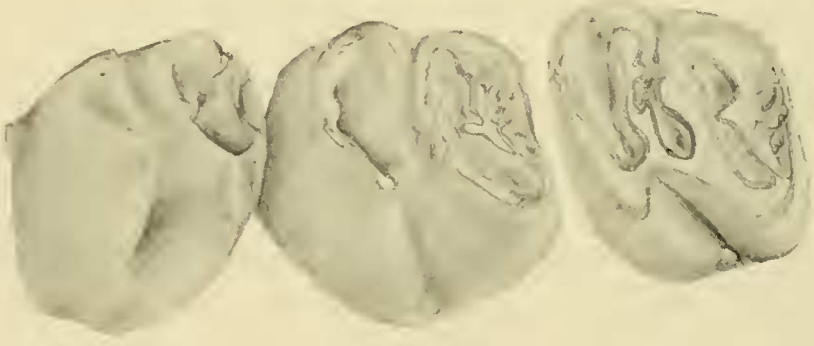


Figure 2. A. *Monosaulax* cf. *M. hesperus* (Douglas), Y.P.M. No. 14035, right M_1-M_3, anterior end to the right, X7 1/2.

DESCRIPTION

M_1 is only slightly worn, M_2 unworn, and M_3 unerupted. All the molars would show three fossettids with further wear. The hypostriid (sense of Stirton, 1935, p. 392) is relatively shallow and extends only halfway down the crown. There is a small fossettid on all the molars anterior to the parafossettid and another small fossettid posterior to it on M_1-M_2. This small posterior fossettid is cut off from the metafossettid and is extremely shallow. The reference of this specimen to *Monosaulax hesperus* is based on the presence of the small anterior fossettid. As Stirton (1935, p. 416) observed, however, the species of *Monosaulax* are not clearly defined and any specific assignment is at best dubious at present.

MEASUREMENTS

	a-p	tr.
M_1	3.45	3.00-3.50
M_2	3.30	3.20-3.40
M_3	2.90	. . . . .

Family Cricetidae

Eumys cliensis, n. sp.

(Figure 3a & b)

Type: Y.P.M. No. 14022, left ramus with I, M_1-M_3, lacking the ascending ramus and inferior border.

Hypodigm: Type only.

Horizon and Locality: Section 28, T11N, R5E, Meagher County, Montana. Fort Logan Formation, Arikareean.

Diagnosis: Teeth large in relation to jaw size; teeth progressively longer from M_1 to M_3; posterior protoconid arm joining metaconid on M_1-M_3; no lingual arm of anterior cingulum on M_2-M_3; mental foramen near inferior border of mandible below anterior root of M_1.

DESCRIPTION

The ascending ramus, angle, and inferior border of the mandible are missing. Enough of the jaw is present, however, to demonstrate that it is relatively small and slender in relation to tooth size in comparison with other species of *Eumys*. This jaw is equal in size to that of *Eumys brachyodus*, somewhat

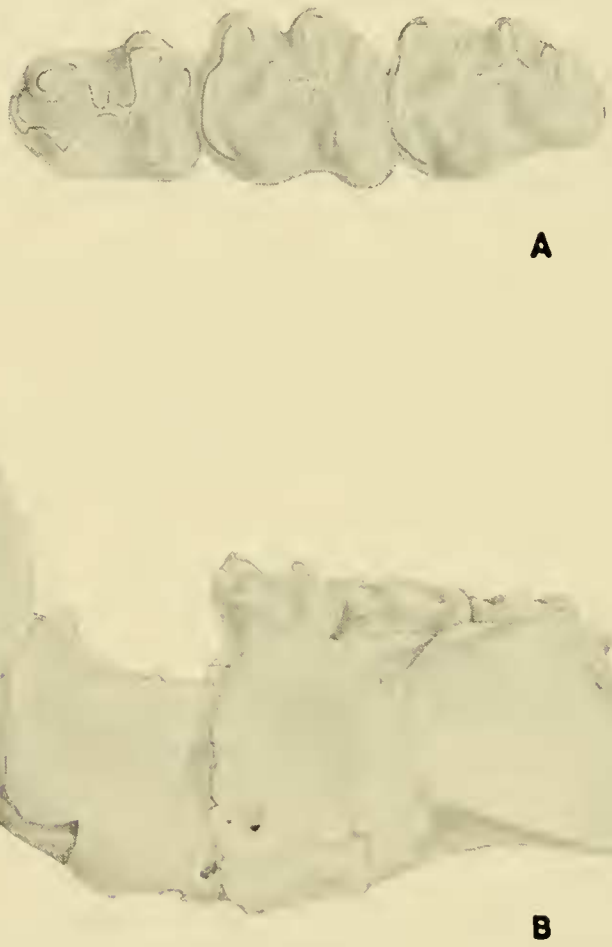


Figure 3. *Eumys eliensis* n. sp., Y.P.M. No. 14022, type. A. Left M_1-M_3, anterior end to the left, X7 1/2. B. Lateral view of left mandible, X5.

smaller and less robust than that of *E. elegans*, yet the dentition is larger than in either of these two species. There is a small accessory foramen immediately anterior to the mental foramen. The masseteric scar terminates below the middle of M_2.

M_1 is the smallest tooth of the series. The anteroconid is small, as high as the protoconid, to which it is joined by a short anterior protoconid arm, but it is well below the metaconid. The posterior protoconid arm passes postero-lingually and joins the posterior slope of the metaconid and with wear should join with that cusp. There is a very short mesolophid and a short lophid (buccal portion of mesolophid of Wood, 1937, p. 249) which passes buccally from the ectolophid. This crest is also present on M_2. The posterior cingulum is separated from the entoconid by a relatively deep cleft. There is no lingual portion of the anterior cingulum on M_2 or M_3. The posterior protoconid arm on M_2 and M_3 would join the metaconid with further wear. The valley between the protoconid and hypoconid does not open to the buccal side where it is dammed by a thin ridge more so on M_2 than on M_3. There is no mesolophid on M_3 but the posterior protoconid arm is well developed. The posterior half of M_3 is constricted, the hypoconid and entoconid being closely appressed. The anterior and buccal sides of the incisor are rounded while the medial face is flat. The enamel is restricted to the buccal face.

DISCUSSION

There are several characters of *Eumys cliensis* that are not to be found in any other species of the genus with which I am familiar. The extreme inferior and posterior position of the mental foramen is unique. The increase in the length of the molars from M_1 to M_3 is also unusual. In all other species M_1 is generally the longest tooth. And, finally, the large size of the teeth in relation to jaw size is striking.

The only previously described specimen which comes close to *Eumys cliensis* in tooth size and structure is U.K. No. 8483 described by Galbreath (1953, p. 73) as *Eumys* sp. This specimen is from the lower part of the Cedar Creek Member of the White River Formation. However, this specimen is described as having a large, heavy jaw, which is decidedly not the case in *E. cliensis*.

E. cricetodontoides, *latidens*, and *spokanensis* (White, 1954) are all large species comparable in overall size to *E. cliensis* but in all three forms the length of the molars decreases from

M_1 to M_3. There are also several differences in crown pattern. There is no lingual portion of the anterior cingulum in *E. cliensis*, which further separates it from *E. cricetodontoides* and *latidens*. It is probably closest in crown pattern to *E. spokanensis* from which it differs in the slight development of the mesolophid on M_1 and the buccal crest between the protoconid and hypoconid of M_2. Furthermore, *E. spokanensis* is of Middle Oligocene age.

As White (1954, p. 410) has pointed out, the intermontaine species of *Eumys* (*cricetodontoides*, *latidens*, and *spokanensis*, to which may be added *cliensis*) share certain features not possessed by the plains forms (*Eumys obliquidens*, *elegans*, *brachyodus*, *exiguus*, and *planidens*). Until a revision of the genus as a whole is undertaken, however, exact relationships will be extremely difficult to determine. It would appear, nevertheless, that *E. cliensis* was probably derived from the Middle and Late Oligocene *Eumys* complex known to have been living to the west of the Fort Logan area. It certainly shares more characters with this group than with the plains forms.

MEASUREMENTS

	a-p	tr.
I	2.3	2.1
M_1	2.50	1.7-1.95
M_2	2.60	2.3-2.3
M_3	2.75	2.25-1.75

Paciculus montanus n. sp.

(Figure 4a & b)

Type: Y.P.M. No. 14027, partial right maxillary with M^1-M^2.

Hypodigm: Type and Y.P.M. No. 14026, broken right maxillary with M^1 in place and isolated M^2-M^3.

Horizon and Locality: Section 8, T10N, R5E, and Section 3, T10N, R5E, Meagher County, Montana. Deep River Formation, Upper Hemingfordian.

Diagnosis: Relatively high crowned; teeth narrow in relation to length; all buccal re-entrants deepening toward centers of teeth; posterior cingulum short; all five crests extremely prominent; mesoloph reaching to buccal margin on all molars; no accessary lophs of *Eumys* type; no hypocone on M^3.

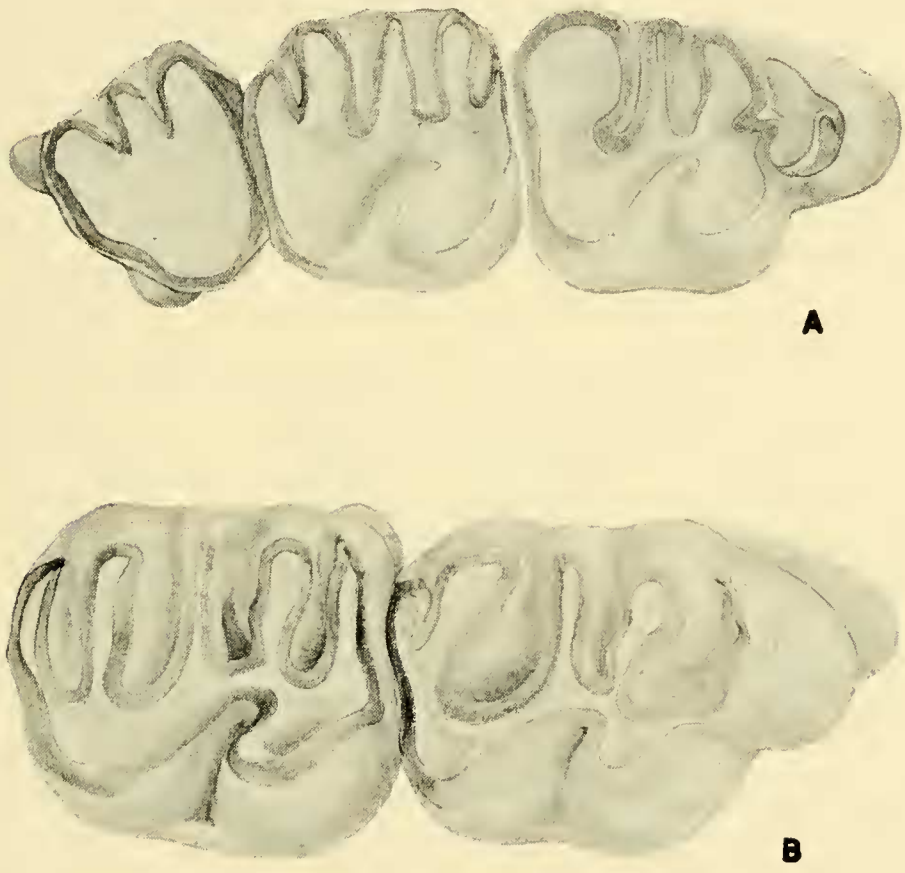


Figure 4. *Paciculus montanus* n. sp. A. Y.P.M. No. 14026, right M^1-M^3, anterior end to the right, X15. B. Y.P.M. No. 14027, type, right M^1-M^2, anterior end to the right, X20.

DESCRIPTION

The upper molars are all extremely simple when compared with those of *Eumys*, *Leidymys*, or *Scottimus*. There are no accessory lophs passing from the protocone to the anterior cingulum nor any sign of mesoloph-metacone connections. M^1 of *Paciculus montanus* is smaller than those of the various species of *Eumys* and than it is in *Leidymys*. All the teeth are narrower in relation to their lengths than are those of other

eumyines with the exception of *Scottimus*. The complete mesoloph passing transversely across M^3 to the buccal margin is unique for the group.

DISCUSSION

Paciculus montanus is extremely similar to *P. insolitus* (Wood, 1936a) from the Middle John Day of Oregon. It differs somewhat in tooth proportions and is possibly somewhat higher crowned than the earlier species, but could easily have been derived from it. The relationships of the genus are still not clear. The dentition is more conservative than any other eumyine, which makes it difficult to derive *Paciculus* from any of the known Oligocene species of *Eumys*.

MEASUREMENTS

	No. 14027		*No. 14026*	
	a-p	tr.	a-p	tr.
M^1	2.3	1.6-1.5	2.35	1.8-1.7
M^2	1.75	1.8-1.65	1.80	1.8-1.65
M^3			1.50	1.60

Family Heteromyidae

Mookomys sp. cf. *M. altifluminus* Wood, 1931

(Figure 5a)

Referred specimen: Y.P.M. No. 14036, left ramus with P_4-M_3, lacking ascending ramus and condyle.

Horizon and Locality: Section 14, T10N, R5E, Meagher County, Montana. Deep River Formation, Upper Hemingfordian.

DESCRIPTION

This specimen appears to be identical in nearly all respects to A.M.N.H. No. 21360 from the Deep River Beds, 7 mi. south of Logan, Montana. The teeth are more worn but exhibit the same pattern. The only difference between the two is that M_2 is slightly larger than M_1 in Y.P.M. No. 14036 (Wood, 1931, p. 4, fig. 4) whereas it is slightly smaller in the type. In this respect it resembles *M. parvus* from Colorado. Since the type of *M. altifluminus* and Y.P.M. No. 14036 both come from the

Deep River Beds near Logan, Montana, reference to *M. altifluminus* rather than *M. parvus* is to be preferred. The possibility exists that *M. altifluminus* and *M. parvus* are conspecific but I have not had an opportunity to see the types.

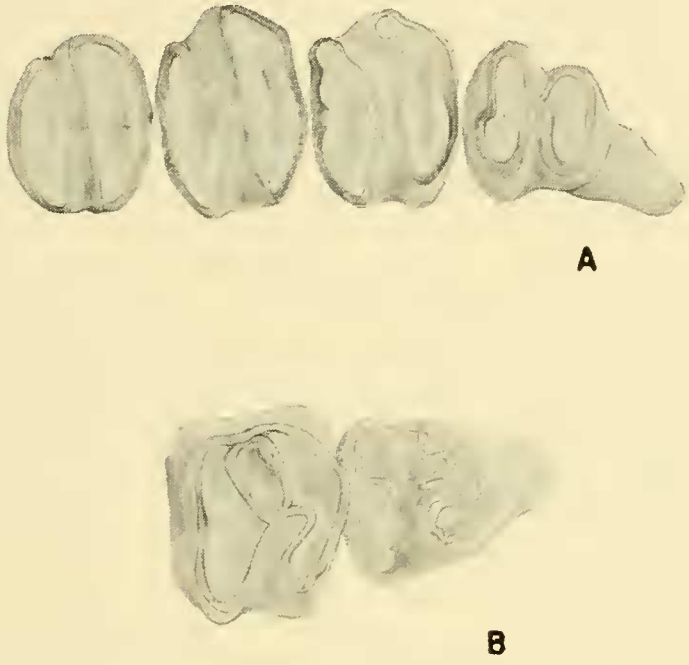


Figure 5. A. *Mookomys* cf. *M. altifluminus* Wood, Y.P.M. No. 14036, left P_4-M , anterior end to the right, X15. B. *Dikkomus woodi* n. sp., Y.P.M. No. 14038, type, left P_4-M_1, anterior end to right, X10.

MEASUREMENTS

	a-p	tr.
P_4	.85	.70- .85
M_1	1.00	1.20-1.00
M_2	1.10	1.25-1.10
M_3	.95	1.10-1.00

Family Geomyidae

Subfamily Geomyinae

Dikkomys woodi,[5] n. sp.

(Figure 5b)

[5] Named for Dr. A. E. Wood.

Type: Y.P.M. No. 14038, left ramus with I, P_4-M_1.

Hypodigm: Type only.

Horizon and Locality: Section 23, T10N, R5E, Meagher County, Montana. Deep River Formation, Upper Hemingfordian.

Diagnosis: Crests uniting in centers of teeth; enamel complete; two cusps on anterior lophid of P_4, only slight trace of anterior cuspule; anterior column of P_4 shorter than in *D. matthewi*.

DESCRIPTION

The jaw is broken through the alveolus of M_2. M_2-M_3 are missing together with the angle and the ascending ramus. The masseteric ridge is very prominent, ending below the anterior root of P_4. The mental foramen lies antero-ventral to the anterior end of the masseteric ridge. The diastema is long and shallow.

P_4 and M_1 are similar to those of *D. matthewi* (Wood, 1936b) except that the anterior column of P_4 is not as long as in that species. The teeth are not as worn as those previously described. The anterior and posterior lophids of P_4 bear two distinct cusps. The two lophids of P_4 and M_1 unite just buccal of the center of the tooth to form the typical geomyine H-pattern. The buccal re-entrant is shallower than the lingual and is closed on M_1. On P_4, a shallow valley immediately lingual to the antero-posterior crest just fails to split the anterior lophid in two and there is a small shallow fossettid in the center of the posterior lophid. At an advanced stage of wear the metalophid and hypolophid of M_1 would unite into a single column completely ringed with enamel.

DISCUSSION

Wood (1936b, p. 26) suggested that *Dikkomys* would be an "ideal starting point for the evolution of the latter Geomyinae." This interpretation was based on the pattern of the lower premolars in which the two lophs unite at the center of the tooth to give a subcircular metalophid and a compressed

hypolophid as in the later forms. Wilson (1936, p. 28), in discussing *Pliosaccomys*, said, "the genus cannot be directly ancestral to any existing gopher but in cheek-tooth characters at least, may show a structural stage through which the Geomyinae have passed." However, I may observe that worn teeth (Wilson, *op. cit.* Pl. 2, fig. 5 & 6) are certainly suggestive of those found in *Thomomys*. The absence of a groove in the upper incisor would also agree with the condition seen in *Thomomys*, although this is a rather tenuous character. Hibbard (1954, p. 357) pointed out this possible relationship, but at the same time he suggested that the genus *Gregorymys* might be ancestral to the Geomyinae, stating (1954, p. 357) that "in *Gregorymys*, the presence of the groove ("sulcus"), which varies as to position on the upper incisor, the development of the skull, and the dental pattern seem to indicate an ancestral relationship to, rather than a parallelism with, the Geomyinae." However, the dental pattern seen in *Gregorymys*, especially in P_4, is far removed from that of any geomyine. There is no indication of a central union of the anterior and posterior lophs. In the contemporary *Dikkomys*, however, we do find a premolar pattern similar to that seen in *Thomomys* and *Geomys* and also in *Pliosaccomys*.

If the suggestion that the geomyine premolars developed from a condition such as that found in *Dikkomys* and *Pliosaccomys* is accepted, the next consideration is the derivation of the single column molar of the later forms. The molars of *Pliosaccomys* are markedly different from those found in *Dikkomys*. The union of the lophs in *Pliosaccomys* begins at the buccal margin and spreads inwards until only one column remains. In *Dikkomys*, on the other hand, the union is first in the center of the tooth. The buccal margins then unite enclosing a lake, the union then proceeding lingually. On the basis of molar structure, it would seem that *Pliosaccomys* and *Dikkomys* represent two distinct lines of later Tertiary geomyine evolution. Which of these lines, if either, is leading to the modern forms it is impossible to say at present. It would appear, however, that the premolar pattern seen in the two genera is the most logical starting point so far known for the recent Geomyinae.

MEASUREMENTS

	a-p	tr.
P_4	1.45	1.15-1.30
M_1	1.50	1.60-1.65

Order Lagomorpha

Family Leporidae

Palaeolagus hypsodus Schlaikjer, 1935
(Figure 6a)

Referred Specimen: Y.P.M. No. 14021, portion of left maxilla with P^3-M^2.

Horizon and Locality: Section 5, T10N, R5E, Meagher County, Montana. Fort Logan Formation, Arikareean.

Figure 6. A. *Palaeolagus hypsodus* Schlaikjer, Y.P.M. No. 14021, left P^3-M^2, anterior end to left, X10. B. *Megalagus dawsoni* n. sp., Y.P.M. No. 14023, type, right P^2-M^2, anterior end to the right, X5.

DESCRIPTION

The specimen consists of a portion of the maxilla with P^3-M^2 and the alveolus of M^3. P^3 has the typical abbreviated anteroloph and the persistent J-shaped crescent. The hypostria almost reaches the crescent, traversing about a third of the width of the tooth. The hypostriae on P^4-M^2 extend approximately half-way across the teeth and are persistent. Enamel is absent externally and is thin posteriorly on all the teeth. Cement is well-developed, filling the hypostriae on all teeth and the crescent on P^3. It does not appear to extend onto the main body of any of the teeth, however.

DISCUSSION

As Dawson (1958) has pointed out, it is extremely difficult to separate *P. hypsodus* Schlaikjer (1935) from *P. burkei* on the basis of isolated dentitions, particularly upper dentitions. Reference of Y.P.M. No. 14021 to *P. hypsodus* in this case is based first on size and secondly on the flattening out of the buccal face of the anteroloph of P^3. In *P. burkei* (Wood, 1940, Fig. 97) the buccal face of P^3 appears to be of rather uniform slope. Whether this character is constant remains to be seen, but it is apparent in all illustrations of the two species so far published.

This occurrence extends the range of the species as given by Dawson (*op. cit.*) from Wyoming, South Dakota, and Nebraska, into Montana.

MEASUREMENTS

	a-p	tr.
P^3	1.80	2.00-3.10
P^4	1.80	3.30-3.00
M^1	1.80	3.30-2.90
M^2	1.50	2.60-2.10

Megalagus dawsoni[6], n. sp.

(Figure 6b)

[6] Named for Dr. Mary Dawson.

Type: Y.P.M. No. 14023, right maxillary with P^2-M^2.

Hypodigm: Type and Y.P.M. No. 14037, left maxillary with P^2-M^3 poorly preserved.

Horizon and Locality: Section 28, T11N, R5E, and Section 23, T10N, R5E, Meagher County, Montana. Fort Logan Formation, Arikareean.

Diagnosis: Buccal roots presumably present (seen on M^2); teeth high-crowned; hypostriae cement-filled, shallow on P^3-P^4, deeper on M^1-M^2, passing one-third of the way across the crown.

DESCRIPTION

The cheek teeth are more high-crowned than in any other species of the genus, and have prominent buccal roots. P^2 exhibits two anterior re-entrants, the buccal being shallow and extending approximately 2.5 mm. down the anterior face of the tooth, the lingual deeper and extending halfway down the anterior face. The hypostriae are shallow and extend only partway down on P^3-P^4, but are deeper and extend well below the level of the alveoli on M^1-M^2. The teeth are longer in relation to their width than in any other species of *Megalagus*.

DISCUSSION

The reference of these specimens to *Megalagus* is based upon the presence of buccal roots and the shallow development of the hypostriae on P^3-P^4. The dentition of *M. dawsoni* shows several advances over other species of the genus, notably the development of cement and greater hypsodonty. In this regard, *M. dawsoni* has progressed further than *M. primitivus*, the only other Miocene species. *M. dawsoni* represents a further, more advanced level of development, derivable from *M. turgidus*, as is *M. primitivus*, but distinct from it.

MEASUREMENTS

Y.P.M. No. 14023

	a-p	tr.
P^2	1.2	2.1
P^3	3.0	2.5-3.4
P^4	2.8	3.5-3.5
M^1	2.5	3.3-3.1
M^2	2.2	3.1-2.5

Hypolagus sp.

Referred Specimen: Y.P.M. No. 14028, partial left maxillary with alveolus of P^2, broken P^3, and P^4-M^1.

Horizon and Locality: Section 25, T10N, R5E, Meagher County, Montana. Deep River Formation, Upper Hemingfordian.

DESCRIPTION

The specimen is much too poor for definite reference, but on the characters available it would seem to be close to *Hypolagus vetus*. The crenulations of the hypostriae are slight on M^1, more wavy on P^4.

MEASUREMENTS

	a-p	tr.
P^4	2.1	4.2
M^1	2.3	4.3

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